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August 9, 1993

EX PARTE

William F. Caton, Acting Secretary
Federal Communications Commission
Washington, D.C. 20554

Re: Notification of Permitted Ex Parte Presentation; MM Docket No. 92-266

Dear Mr. Caton:

Continental Cablevision, by its attorneys and pursuant to Sections 1.1206(a)(1) and (2) of the Commission's Rules, hereby submits an original and one copy of a letter to Alexandra M. Wilson and attachment regarding a permitted ex parte presentation to the Commission's staff regarding MM Docket No. 92-266.

If you have any questions, please contact the undersigned.

Respectfully submitted,

John D. Seiver

Enclosure

cc: Alexandra M. Wilson (w/encl.)
Robert Corn-Revere (w/encl.)
Robert Pepper (w/encl.)
Byron Marchant (w/encl.)
John Hollar (w/encl.)

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August 6, 1993

ROBERT J. SACHS
SENIOR VICE PRESIDENT
CORPORATE AND LEGAL AFFAIRS

Alexandra M. Wilson
Special Assistant to the Chief
Mass Media Bureau
Federal Communications Commission
1919 M Street, NW - Room 314
Washington, DC 20554

Dear Sandy:

As I mentioned yesterday, Economics and Technology, Inc. ("ETI") has been doing some work for Continental analyzing the Commission's rate benchmarks. Within the past week, ETI has discovered that the degree to which a system is addressable appears to have an important effect on cable system rates. Enclosed is a memorandum that ETI has prepared which discusses their findings. We would appreciate it if you would share this information with those people on the Cable Task Force staff who did the regression analyses for the benchmark tables. Even though addressability was a factor the Commission inquired about in its rate survey, from the information the Commission has released it appears that no regressions were run using addressability as a variable.

In addition to ETI's memorandum, I am enclosing a statement of qualifications for David J. Roddy who authored the memorandum. We would be pleased to arrange for Dr. Roddy to meet with whomever you might suggest to discuss his findings. Again, many thanks for your time.

Sincerely,

Robert

cc: John Hollar, Esq.
Byron Marchant, Esq.
Dr. Robert Pepper
Robert Corn-Revere, Esq.
Donna Searcy, Secretary

ECONOMICS AND TECHNOLOGY, INC.

DAVID J. RODDY
VICE PRESIDENT

ONE WASHINGTON MALL
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MEMORANDUM

TO: **Continental Cablevision, Inc.**

RE: **The effect of accounting for addressability in the cable television rate benchmarks**

DATE: **August 6, 1993**

Summary

The regression model which was used by the Federal Communications Commission to create the benchmark tables in Part II of Form 393 failed to consider the extent of addressability of the systems in its sample. The percent addressability has an important effect on cost and price and hence should be included in the model. When we include the variable in the model, it is statistically significant and indicated that systems with higher addressability have higher prices per channel.

Rather than propose a completely new set of benchmark tables based on a new regression model, we can correct for the Commission's error and still use the original benchmark tables and forms. We do this by estimating a supplementary regression which produces a table of values which are to be added to the benchmark values before they are inserted into Lines 121 and 220. The value to be added varies from 0-cents for a system with 0-percent addressability to 7.4 cents for a system with 100 percent addressability.

Discussion

The Commission's benchmark formula is shown in Appendix E of the May 3, 1993 *Report and Order* on cable rate regulation, as:

(1) **LNP = 2.4448 + 7.3452 (RECIPSUB) - 0.8878 (LNCHAN) + 0.1006 (LNSAT) - 0.0939 (ABC)**

where:

LNP	**= natural logarithm of the benchmark rate per channel;**
ABC	**= 1 if the community unit belongs to one of the categories comprising the statutory definition of "effective competition" otherwise 0;**
RECIPSUB	**= 1 / number of households subscribing to the cable system;**
LNCHAN	**= natural logarithm of the number of channel in use in all regulated tiers**

	of service;
LNSAT	**= natural logarithm of the number of satellite-delivered channels on all tiers of service.**

The Adjusted R Squared of the model is **0.628** and the number of observations is 377. This regression model is described at paragraphs 25 through 34 of Appendix E of the May 3, 1993 Order. The Commission used this regression model to create all of the Benchmark Tables used in Part II of Form 393.[1]

Omitting variables which should be entered in a regression causes serious problems in the model and the validity of its results. Such an omission biases the results of the regression model.[2] The Commission has noted the possibility that important variables which legitimately affect both cost and price might appropriately be added to the regression model in order to improve its accuracy.[3]

One such variable is the addressability of the individual system. Addressability is the addition of functionality to the cable system allowing the operator to implement specific service features at individual subscriber locations or addresses. Addressability requires added capital investment in cable headend, distribution and customer premises equipment. These costs may be incurred over several years as systems are upgraded from older technology to addressable technology. We would expect that systems with higher addressability would have higher costs and hence higher prices per channel. If such a variable is omitted from the model, the effect is to penalize systems with high addressability.[4]

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[1] In its July 30, 1993 release of Form 393 to be used with cable rate submissions, the Commission eliminates the ABC variable and subtracts .0939 from the Appendix E constant term of 2.4448. This produces a constant term of 2.3509 in the Form 393. Both methods produce identical results.

[2] Any number of standard texts, such as Greene, William H., *Econometric Analysis*, New York, NY: MacMillan Publishing Company, 1990; Theil, Henri, *Principles of Econometrics*, New York, NY: John Wiley & Sons, 1971; and Wonnacott, Ronald J. and Wonnacott, Thomas H., *Econometrics, Second Edition*, New York, NY: John Wiley & Sons, 1979 would support this principle.

[3] This possibility is reflected in paragraph 72 of the July 15, 1993 *Notice of Proposed Rulemaking* on cost of service standards for the cable industry (MM Docket 93-215), where the Commission noted that, "Operators who could demonstrate the existence of such factors might then be permitted to charge rates equal to the benchmark plus an 'add-on' amount attributable to those extraordinary factors."

[4] The Commission equipment basket cost rules, in Part III of Form 393, allow cable operators to differentiate the costs of addressable and nonaddressable subscriber converters. This feature, however,
(continued...)

Corrected stepwise regression results show the error of excluding addressability

We tested to see whether the percentage of addressable subscribers in the systems in the Commission's sample would have a statistically significant effect on price. This variable is readily available in the FCC data released to the public.[5] We define the percent addressable as:

(2) **PADDRES = 100 times (number of addressable subscribers / number of households subscribing).**

We calculate the variable from the Commission's database of 377 systems as S2_ASUBS divided by S2_HHSUB.[6]

In the next step of the analysis, we duplicate the stepwise regression procedure that the Commission stated that it used in paragraph 26 of Appendix E with the same SPSS software that the Commission used. In brief, stepwise regression "automatically" selects variables to be used in the model based on their importance in explaining the variation of prices per channel in the sample. The researcher's role is to specify a group of variables, such as number of channels, subscribers, satellite channels, to be considered for addition to the model. In our analysis, we allow addressability to enter as well as all of the Commission's variables specified in (1) above.

Our stepwise regression results showed clearly that addressability entered the model in a statistically significant manner. In fact, it was the second most important variable to be entered after the number of channels. The t statistic on percent addressability is **3.72** which, since it is greater than 1.96, indicates a highly significant and relevant variable. The Adjusted R Squared from this new model is **0.636** -- greater than that for the Commission's

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[4](...continued)
does not actually *recognize* the costs of addressability, because the gross costs associated with converters and other cable equipment are simply deducted from Part II of the form used to calculate benchmarks. The adjustment proposed here, then, does not require any change in the Part III equipment costing process.

[5] We used the revised database designated as "CABLERE2.EXE" and dated June 11, 1993. With this database and using SPSS software, we duplicated the Commission's Appendix E statistical results exactly.

[6] The references are shown in FCC's "Release of Data from Cable TV System Operators Rate Structure Questionnaire," February 24, 1993, Schedule 2.

Appendix E model shown in (1) above.[7]

Thus, we have used the Commission's data without modification, the same software, and the same regression modeling technique. We allowed addressability to be added to the model and it was automatically selected by the computer software as one of the most significant variables to enter the model. We conclude that addition of the percent addressability to the model was not tested by FCC, despite the fact that it was one of the first items asked for in its cable system questionnaire. If the FCC had allowed the software to consider adding this variable, it would have achieved identical results to ours.

The "Benchmark Plus" model

It is clear that addressability has an important effect on cost and hence price. In order to implement the add-on effect of addressability and preserve the many forms that the Commission has already created, we adopt a "supplementary regression" approach.

In this approach, we take the residuals of the Commission's equation in (1) and use those as the dependent variable in a regression on addressability. This econometric procedure is in the class of constrained estimators. It minimizes the sum of the squared residuals of the full model (including addressability) subject to the constraint that the parameters of the Commission's model, in Appendix E of the *Report and Order*, cannot change. The residuals are the "unexplained" part of the model, i.e., that portion of price variation which cannot be predicted using the variables already in the model. We are thus attempting to determine whether or not addressability can help further explain the variation in price per channel in the Commission's sample of 377 systems. If addressability can help explain the residuals then it is clearly a factor that will improve the model, and, given the stepwise regression results reported above, one should expect that it will be a statistically important variable.

The results of this supplementary regression model are:[8]

(3) RESID = 0.0009 (PADDRES)

where

RESID = unexplained part (residuals) from the FCC model in (1) above.

The t statistic on percent addressability is 2.81. Since the t statistic is greater than 1.96, we

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[7] All of the other variables are also statistically significant as well.

[8] We omit a constant term here because there is already a constant term in the model in (1) above.

conclude that addressability is an important omitted variable and that it definitely has a statistically significant effect on price. It is thus obvious that addressability is a reasonable and important "add on" amount which affects both cost and price per channel. This is exactly consistent with the results of the stepwise regression which we reported in the previous section. The supplemental model also shows that addressability meets not only the standard statistical tests discussed above but also the intent of the Commission regarding additional factors which would justify rates higher than the benchmark tables.[9]

We convert the 0.0009 coefficient into a table showing the additive amount (in cents) for various levels of addressability. Since the coefficient relates to natural logarithms, we compute the effect at the mean of the Commission's sample of 377. This provides a straightforward implementation procedure with a very simple table (below).[10] The formula used to create the table is:

(4) **ADD-ON VALUE = exp (0.0009 PADDRES - 0.244) - exp (- 0.244)**

where

ADD-ON VALUE = **add on value in cents per channel;**
exp = **2.718 raised to the power.**

and -.244 is the mean of the natural logarithm of price per channel in the Commission's sample.[11] This add-on value is thus the difference between the model which considers addressability and the Commission's model which does not consider it. Note that the exp operator is required to convert from natural logarithm values used by the Commission in model (1) above.

The add-on formula shows that the add-on value depends on the extent of addressability in the given system. A system with 0 percent addressability yields a 0 cents per channel add on value. In contrast, a system with 100 percent addressability yields an add-on value of 7.4-cents per channel.

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[9] See footnote 3 above.

[10] In principle, one could create a different "add-on" effect for systems with different numbers of subscribers and channels. Our procedure cures the Commission's problem with a minimum of additional calculations required by the Commission and the cable system operator.

[11] This value corresponds with a mean cents per channel of 78.3 cents.

Procedure to implement the Benchmark Plus model

One can correct the Commission's error by first using the existing benchmark tables (or formula) and finding the appropriate value as instructed in Form 393. Then, before entering the value in Lines 121 and Line 220, add the applicable amount from the table below, depending on the percent addressability of the system. Interpolation between the different data points on this table should be accomplished according to the Commission's instructions in Attachment A to the benchmark tables, item 3. This combination can be referred to as the corrected benchmark value. After this calculation has been made, the corrected benchmark value would be entered in Lines 121 and Line 220 in Form 393 and the remainder of the form would be completed pursuant to the existing rules and instructions.

Amount to be Added to FCC Benchmarks To Account for Percent Addressability

Percent of Subscribers Who Are Addressable	Amount Per Channel to Add to Benchmark Value
0	$0.000
10	$0.007
20	$0.014
30	$0.021
40	$0.029
50	$0.036
60	$0.043
70	$0.051
80	$0.058
90	$0.066
100	$0.074

Source: FCC Cable Operator June 11 Database, and ETI Regression Model

Attachment A

STATEMENT OF EXPERIENCE AND QUALIFICATIONS
OF DR. DAVID J. RODDY

I received a Ph.D. in Economics at the University of Wisconsin, Madison in 1980, an M.A. in Public Policy and Administration from the University of Wisconsin, Madison and a B.A. in Economics from the University of Illinois, Urbana. My fields of study include Regulated Industries, Econometrics, Statistics, and Finance. I am a member of the American Economic Association and the American Statistical Association.

From 1983 to the present time I have been employed as a consultant to Economics and Technology, Inc. and then successively through other positions to my current position as Vice President and Senior Economist. In these positions I have conducted major studies of telecommunications issues, including productivity, incentive regulation & regulatory reform, network modernization, intercompany cost comparisons, econometric demand and cost models, statistical market research, cost allocation, and minimum cost network designs. I have prepared continuing analyses of various issues related to the implementation of the LEC Price Caps program, including recent comments on various statistical models submitted by the LECs to estimate the effects of implementation of FAS-106 post-retirement benefits accounting changes in FCC Docket 92-101. I have also prepared detailed LEC productivity studies in several states and have analyzed evidence on telecommunications industry productivity.

From 1981 to 1983, I was a Senior Economist with Data Resources, Inc., a nationally known consulting firm. There, I made contributions to DRI's well-known 1200 equation forecasting model of the US economy. I also developed econometric and statistical models for clients in the telecommunications and automotive industries. In addition, I have performed analyses of various cost methodologies used by telephone companies to determine costs and to set rates; and to estimate econometric telecommunications demand models to determine estimates of repression and stimulation of demand as a result of price changes.

From 1978 to 1981, I was an instructor and later an Assistant Professor at the Business School at the University of New Hampshire, Durham, teaching graduate and undergraduate courses in Economics, Econometrics, and Quantitative Methods. From 1972 to 1974, I was a staff economist with the Antitrust Division, U.S. Department of Justice, where I conducted economic and financial analyses on antitrust cases and investigations in both regulated and unregulated industries. In 1974, I received the Justice Department's Superior Performance Award.

I have conducted studies concerning a wide range of econometric and statistical issues, some of which are represented in the following papers:

Roddy, D. and R. Mayer, "Consumer Interest in New Communications, Information, and Entertainment Services: Statistical Analysis of New Survey Data", *Presented at the Meetings of the Southeastern Association of Regulatory Commissioners*, Orlando, Florida, June 15, 1993.

Economics and Technology, Inc, Theodore Barry and Associates, and Scott, Madden and Associates, *Potential Performance Gains of New York Telephone*, for the New York Public Service Commission, November, 1992. (Statistical and Econometric Chapters)

Analysis of FAS 106 Effects Under Price Caps: A Test Case for LEC Price Cap Regulation by the FCC (with Page Montgomery), submitted July 1, 1992 in FCC Docket 92-101, Treatment of Local Exchange Carrier Tariffs Implementing State of Financial Accounting Standards, by the Ad Hoc Telecommunications Users Committee and the International Communications Association.

Roddy, D., E. Simos, and J. Triantis, "A Two Output, Multi-Input Model of Exogenous and Endogenous Technological Change of the U.S. Economy," *Economic Notes*, Vol. 14, No. 2, 1985.

Roddy, D. and P. Matthews, "A Monthly U. S. Forecasting Model Using the Vector Autoregression Technique," *Data Resources Review of the U.S. Economy*, November, 1981.

Roddy, D., D. O'Reilly, and B. Hui, "Forecasting Economic Activity with a Multiple Time Series Model of the U.S. Economy," *Data Resources Review of the U.S. Economy*, August, 1981.